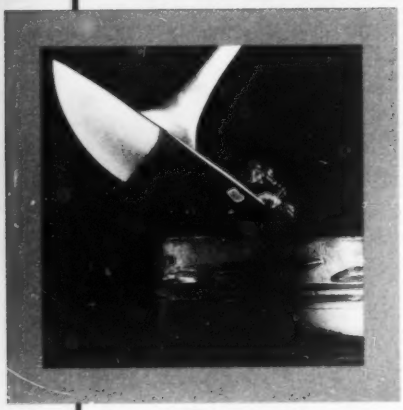
CHILTON'S

MARCH 1991

FOOD ENGINEERING

SINCE 1928, THE SOURCE ON PROCESSING, PACKAGING, AND PRODUCT DEVELOPMENT



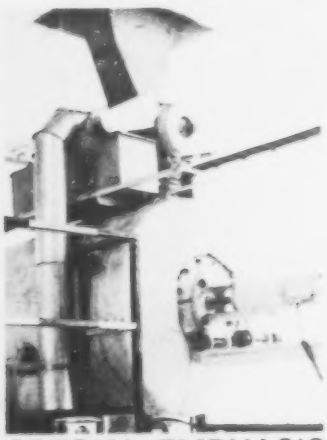
NEW PRODUCT ANALYSIS

**********5-DIGIT 20814
FE 100
SUSAN GARNER
CONGRESSIONAL INF SVC.
4520 EAST-WEST
BETHESDA MD 20814-3319

FOOD ENGINEERING

ABOUT THE COVER

The number of new products introduced last year—4,132—smashed all previous years' reports. The top food companies are still showing a lot a strength in a era of recession, according to *FE's* annual analysis.



SPECIAL EMPHASIS

PAGES 91 TO 94

SHELF-STABLE: **PAGE 98**

ENGINEERED FOODS

28 Sulfite Alternative Prevents Browning
Enzyme-specific action allows shrimp processors to cut additive levels to 50 ppm or less.

35 Sauces Continue Fiery Growth
While culinary trends come and go, the sauces that heralded the trend often outlast the trend's popularity.

36 Highly Intense Sweet Substitute
Abrusosides are novel triterpene glycosides occurring naturally in the leaves of *Abrus precatorius* and *Abrus fruticulosus* plants.

36 FDA Halts Cholesterol-Controlling Eggs
The Food and Drug Administration has told C.R. Eggs to stop marketing its *Heartland's Best* eggs.

38 Choices—If Consumers Wrote the Labels
Important questions are yet to be asked.

FOOD PACKAGING

50 Oxygen Absorption Reaches New Plateau
New label technology can absorb 100cc of oxygen in a 24-hour period.

52 DuPont Packaging Awards Announced
Three food packaging developments and two environmentally responsible recycling programs received awards for their dynamic innovations.

57 Tie-layer Resin for Coextrusion Coating
A modified low density polyethylene-based tie-layer (adhesive) resin, *Plexar PX 175*, is designed primarily for use in coextrusion coating.

57 Heavy Metals Removed from Ink
Company commits to eliminate, wherever practical, any ingredients used in the manufacture of its products that adversely affect the environment.

FEATURES

65 New Product Analysis
Despite the fear of impending economic downturns last year, a record 4,132 new products were introduced according to *Food Engineering's* annual look at the industry.

83 1991 Equipment Buyers Survey
Process control and sanitation continue to top the list of equipment purchasing priorities. Needed: better sensors and on-line analysis.

91 Cookers, Fryers Heat Up the Market
Food processors are turning to cooking and frying technologies to produce food at less cost and, at the same time, to develop ways of eliminating fat and calories in those products.

PROCESSING & CONTROL

98 World's First MW-Sterilization System
P&T Foods, situated in the quaint Belgian town of Hulshout, pioneered microwave-sterilized shelf-stable meals in barrier-plastic packaging: a four-item line of *Top Cuisine* pasta dishes with sauces containing meat and cheese, packaged in microwaveable barrier-plastic containers for shelf lives ranging from nine months to one year.

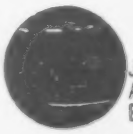
104 Online—Consistency and Quality
To meet today's demands you must reduce the variations of both equipment and process.

DEPARTMENTS

11 Editorial
12 Calendar
17 Industry Report
120 New In Print
125 People
133 Classified Ads
144 The Final Analysis

NEW PRODUCTS

112 Sanitation & Maintenance
117 Handling & Distribution



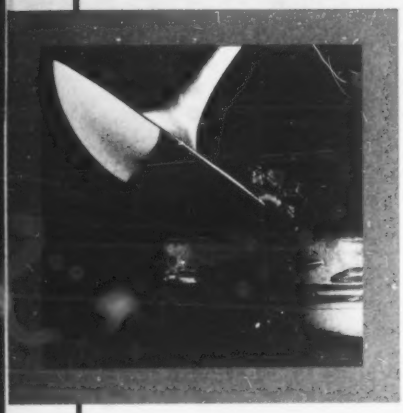
JESSE H. NEAL AWARD-WINNING EDITORS

Publisher of Food Engineering Master Catalog and Food Engineering International
Co-sponsor of Food Plants '91
Co-sponsor of Food Labs '91

Permission to photocopy for internal use or the internal use of specific clients is granted by Chilton Company for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $1.00 per copy of the article, plus 25¢ per page is paid directly to the CCC, 27 Congress St., Salem, MA 01970. Special requests should be addressed to The Editor. (0193-323X/85 $1.00 + 25¢)

FOOD ENGINEERING® (ISSN 0193-323X) March 1991, Vol. 63, No. 3. Published monthly by Chilton Company, Chilton Way, Radnor, PA 19089 (Telephone 215/964-4000). Chilton Co., one of the ABC Publishing Companies, a part of Capital Cities/ABC Inc., New York, NY. Second Class Postage Paid at Wayne, PA 19087 and additional mailing offices. Title registered in U.S. Patent Office
™Chilton Company, 1991. All rights reserved.

POSTMASTER: Send form 3579 to Food Engineering, Post Office Box Number 2035, Radnor, PA 19089.



NEW PRODUCT ANALYSIS

CHARLES E. MORRIS
MIDWEST EDITOR

PATRICIA M. DILLON
SENIOR ASSOCIATE EDITOR

LETICIA MOORE
TECHNICAL EDITOR

	PAGE
INTRODUCTION	66
MICROWAVEABLE FOOD	67
CELEBRITY & LICENSED CHARACTERS	72
HEALTHY BEVERAGES	73
RICE & PASTA	74
WEIGHT LOSS PRODUCTS	76
LIGHT BAKERY	77
LIGHT DAIRY	78
GOURMET INDULGENCES	80

Food and beverage introductions in 1990 totaled 4,132, according to Marketing Intelligence Service, a product tracking firm based in Naples, NY. This tally smashed all previous New Product Analysis surveys reported by *Food Engineering*. Apparently, 1990 rumors of recession did not stem the tide of new food product introductions. And even with the recession now hard upon us, the introductions are not expected to stop, at least for another few months, according to Richard Lawrence, president of Marketing Intelligence.

Looking back "1990 was a surprising year," he said. "The first quarter was a continuation of the cautious pattern of the previous two years in which introductions were flat or down. It failed to signal the surge in food and beverage product introductions that started in the second quarter and pushed total new products to their highest ever."

1990 may indeed become a pinnacle year for new food and beverage introductions since it jumped ahead of '89 introductions by 16 percent; a stark contrast compared to '89's genteel increase of 1 percent over '88. The previous high occurred in 1987 with 3,581 food and beverage introductions.

Lawrence attributed the acceleration in new products to the financial strength of leading companies in the food and beverage industry—the ten top being responsible for close to 13 percent of new product launches. He added that Marketing Intelligence will be watching the top companies for any indication that the recession is putting a brake on introductions.

Existing brand names continued to take command of consumer awareness with 63 percent of the introductions being line extensions—either as new varieties, improved formulations, new sizes or featuring packaging changes. Less than one in five new products was introduced under an entirely new name.

While there were fewer true new products, 1990 can be called a *light* year. An echo of years past—light has

Food	Total Intros.	New Brand	Line Ext. W/in Brand	Other (i.e. New Package)	Total SKUs
Baby Food	10	5	0	5	48
Bread & Bread Products	142	67	1	74	348
Cake Mixes & Cake Frosting Mixes	24	7	–	17	52
All Other Baking Mixes	74	24	2	48	131
Catsup	14	5	–	9	24
Cereals	90	31	1	58	151
Cheese	154	67	–	87	463
Chewing Gum	32	6	–	26	75
Chips	78	29	1	48	172
Chocolate Candies	128	33	–	95	400
Non-Chocolate Candies	121	39	2	80	364
Cookies	178	48	2	128	440
Crackers	59	17	–	42	97
Dairy Substitutes	15	8	2	5	29
Other Non-Beverage Dairycase Products	14	8	–	6	18
Desserts	19	6	–	13	41
Special Diet Foods	66	28	–	38	144
Entree Mixes	13	6	–	7	37
Fish	47	12	–	35	135
Fruits	41	16	1	24	84
Ice Cream & Ice Cream Cones	180	89	5	86	600
Jams, Jellies, Marmalades, Sweet Butters	58	25	1	32	260
Margarine, Butter, etc.	21	5	1	15	32
Mayonnaise & Imitation Mayonnaise	14	1	–	13	20
Meals & Entrees	157	58	3	96	367
Meat Meals & Entrees	81	14	1	66	159
Fish Meals & Entrees	22	9	–	13	56
Poultry Meals & Entrees	77	6	–	71	146
Vegetable Meals & Entrees	6	5	–	1	39
Meat	76	30	–	46	181
Mustard	28	9	9	10	59
Non-Stick Surfacing Products	4	2	–	2	4
Nut Butters	16	4	1	11	32
Nuts & Seeds	53	21	–	32	171
Oil & Shortenings	47	17	–	30	80
Pasta Products & Combos	70	42	1	27	262
Pastry & Salad Products	100	40	3	57	314
Pickles, Relishes, Olives, Chutney, etc.	70	23	–	47	146
Popcorn	66	24	3	39	287
Poultry	52	15	–	37	148
Prepared Salads	13	9	–	4	51
Rice & Rice Combos	40	14	–	26	72
Salad Dressings	71	27	–	44	159
Salad Toppings & Dips	27	11	3	13	76
Spaghetti Sauces & Other Pasta Sauces, Pizza Sauce	41	15	2	24	73
Other Sauces, Gravies & Condiments	168	62	2	104	352
Savoury Spreads	29	14	–	15	90
Snack Bars	11	3	–	8	22
Other Snacks	131	51	3	77	284
Soup	64	17	–	47	180
Spices, Extracts & Seasonings	125	54	2	69	476
Staples	40	15	1	24	86
Sweet Toppings	61	24	2	35	147
Vegetable Protein Products	40	17	–	23	83
Vegetables	89	27	1	61	177
Yogurt and Yogurt Imitations	22	12	–	10	75
Total	3489	1273	56	2160	9019

Source: Productscan®, Marketing Intelligence Service Ltd.

become the food and beverage marketers' mantra. There are light sour creams, light cakes, light desserts, light ice creams—even light popcorn—a snack that never had a heavy image to begin with.

Health claims predominate in various forms: 15 percent of new foods and beverages claimed to have no or low cholesterol; 13 percent claimed no or low fat; and 21 percent said they were wholly or partly natural, according to Janet Mansfield, information center manager at Marketing Intelligence. These concerns beat convenience as a selling point, with only ten percent of the new introductions claiming to be microwaveable and five percent available in single-serve presentations.

Other areas that our editors focused on in the following pages include the upsurge of fast food clones in the microwaveable area; the splintering of microwaveable entrees into an-adult and child market; explosive growth in rice and pasta; and bottled waters drinking up a flood of profits within the beverage segment. New food introductions have kicked off the decade with an impressive start.

	1989	1990
Philip Morris Co., Inc.	156	119
Campbell Soup Co.	51	48
Quaker Oats Co.	28	43
Unilever U.S., Inc.	47	43
Grandmet Consumer Prod.	32	37
Nestlé Holdings, Inc.	52	35
General Mills, Inc.	38	32
Procter & Gamble Co.	18	32
RJR Nabisco Inc.	46	31
Sara Lee Corp.	—	30

Source: Productscan®, Marketing Intelligence.

Food	Total Intros.	New Brand	Line Ext. W/in Brand	Other (i.e. New Package)	Total SKUs
Alcohol	33	16	0	17	49
Alcohol Beverage Substitutes, Low Alcohol	9	4	—	5	17
Baby Beverages	5	3	—	2	10
Beer & Ale	44	21	—	23	65
Beverage Mixes & Bases	26	9	—	17	67
Cocktail Mixes	15	6	1	8	28
Coffee	86	35	4	48	330
Fruit and Fruit Flavored	108	32	—	76	282
Health Drinks	13	6	—	7	20
Isotonic, Energy-Producing Beverages	27	12	—	15	50
Liqueurs	9	5	—	4	10
Milk & Non-Dairy Milk	37	15	—	22	75
Milk Additives	2	1	—	1	2
Mineral Water & Bottled Water	43	27	—	16	134
Miscellaneous Soft Drinks	59	23	1	35	189
Tea	68	33	—	35	221
Vegetable & Vegetable-Flavored	10	3	—	7	11
Wine & Wine Coolers	50	24	—	26	91
Total	643	275	6	362	1621

Source: Productscan®, Marketing Intelligence Service Ltd.

MICROWAVEABLE FOOD

The average American family uses its microwave 4.6 times a day, according to research conducted by the Campbell Microwave Institute. This trend has fueled the sales of microwaveable foods, forecasted to reach $4 billion in 1994. Following are several categories in which notable developments occurred in 1990.

Fast Food Clones: Clones in the form of frozen sandwiches, pizza and breakfast products accounted for 10 percent of the total microwaveable market. Sandwiches alone topped $300 million in sales for 1990, and there was considerable new product activity in the category.

Nearly one out of three frozen sandwiches sold was a hamburger or cheeseburger. One of the first manufacturers to gain recognition in this category, J. R. Simplot of Boise, ID, introduced a *MicroMagic Bacon*

Food from America's favorite restaurants—the fast food outlets—is duplicated for the home microwave.

Cheeseburger and *Patty Melt* to its lineup. Canada Packers is marketing *MicroMarvels Microwave Hamburgers* and *Cheeseburgers* in Canada. Like MicroMagic, the MicroMarvel line also features french fries and milkshakes. Bridgford Foods Corporation (Anaheim, CA) includes packets of ketchup and mustard with its *Bridgford Micro-Ready Microwave Hamburgers*.

Marketed as snacks, mini sandwiches continue to be very popular. Jimmy Dean Meat Company, which introduced *MiniBurgers* in 1988, unveiled *Ham'n Cheese* and *Chicken MiniBites* frozen sandwiches in 1990.

Today, more convenience stores have microwaves on the premises, allowing owners and managers to stock a variety of items. *Hot Pockets Super Deli Size* sandwiches by Chef America (Chatsworth, CA) are one example of this category and are available in Pepperoni Pizza, Beef and Cheddar, Ham n' Cheese and Turkey, Ham n' Cheese.

In an effort to resuscitate flagging sales, frozen microwaveable pizza manufacturers are now catering to the children of baby boomers, the first generation to grow up with frozen pizza. For example, *Chicago Brothers Pizza for Kids* (San Diego, CA) is an animal-shaped pizza with a blander sauce that caters to kids' preferences. And the *Teenage Mutant Ninja Turtles* are featured on McCain's Foods' new pizza boxes.

The frozen breakfast product market is estimated at $788 million and is still growing. New entries in 1990 include: *Weight Watchers Microwave Breakfasts* featuring sandwiches, coffee cakes and full breakfasts; *PitaStuffs A.M.* stuffed pita pocket sandwiches; and Oscar Meyer's *Zappetites* sandwiches and entrees.

Shelf-stable foods: Popcorn is the largest single category in the microwaveable foods market and it is continuing to grow. A study by FIND/SVP (New York, NY) shows popcorn accounting for $740 million and two-thirds of the total shelf-stable segment. Another dynamic segment is the prepared meal market, climbing 61 percent over 1989 sales. According to Peter Allen, FIND/SVP's vice-president of Market Research Reports, "the segment's entree market is in a state of flux as it begins to subdivide into adult/upscale and children's/downscale segments, with different formulations, packaging and marketing for each product group." (See Jan. *FE* p. 69-78.)

ConAgra (Omaha, NE) stepped into this arena by introducing *Healthy Choice* shelf-stable entrees, packaged in microwaveable cups (and cans). Flavors include Beef Stew, Lasagna with Meat Sauce and Spaghetti with Meat Sauce. Kraft General Foods changed the name of its *Impromptu* shelf-stable line to *Kraft Microwave Entrees*, coinciding with a change in the line's packaging to include a new recyclable tray. The popular *Lunch Bucket* line, introduced in 1987 by Dial Corp. (Phoenix, AZ), spawned the new *Light Balance* line. These 8.25 ounce tub-size servings contain about 220 calories and retail for $1.69. 99¢ buys a *Chef Boyardee Microwave Meal*, a 7.5 ounce serving of pasta and sauce manufactured by American Home Foods. Thomas J. Lipton Co. is targeting the lunch crowd with its *Hearty Ones* line. Add water and microwave for six minutes to make an 11 ounce serving of soup or pasta.

Healthy Frozen Entrees: Buoyed by the success of *Healthy Choice*, ConAgra expanded the line in 1990 to include forty frozen items. The com-

Our almonds make everyone's figures look better.

Blue Diamond Almonds are available in over 2,000 different grades, shapes and sizes.

Blue Diamond food technologists are constantly finding healthy new uses for almonds.

MORE NUTRITIONALLY APPEALING

*Add Blue Diamond® Almonds to your product and you'll see an attractive improvement in your nutritional figures. Our almonds have more dietary fiber than oat bran. More Vitamin E than sunflower seeds. More iron than raisins. And the most calcium of any nondairy ingredient.**

Almond oil, like olive oil, is mostly mono-unsaturated fat.

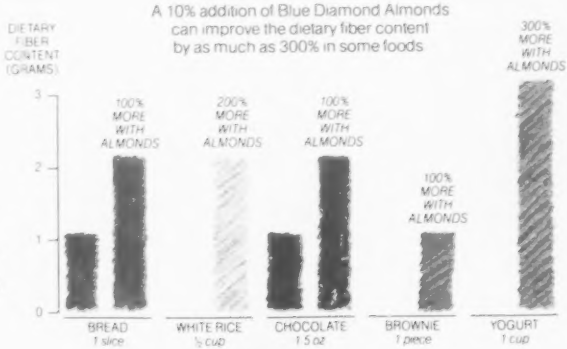
GOOD FATS

Naturally, almonds have some fat. But saturated fat, bad fat, is a very small part of it. Most of its fat is good fat, mono-unsaturated fat. Which, according to the U.S. Surgeon General, actually appears to reduce cholesterol.

A TASTEFUL PRESENTATION

Almonds are noted for enhancing the flavor of food rather than dominating it. Perhaps this is why consumers think products with almonds are so special. To them, almonds add taste as well as value to a product.

A 10% addition of Blue Diamond Almonds can improve the dietary fiber content by as much as 300% in some foods.



HEALTHY SALES

Best of all, you can significantly improve your sales and profits. With Blue Diamond Almonds, your new figures will definitely turn some heads.

BLUE DIAMOND

We do almond anything.

*Based on proposed FDA serving sizes

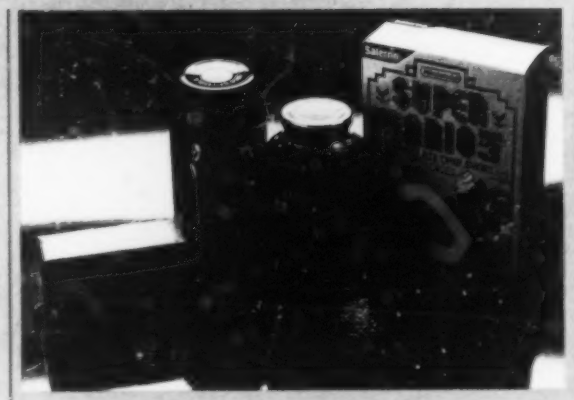
Write for our latest brochure. BDG/Food Group, 32107 Lindero Canyon, #121, Westlake Village, CA 91361

Circle 42 on Inquiry Card

Stars vie to 'do it my way'

Maybe you can't get Frank Sinatra to come out to sing at your block party, but you can bag ol' Blue Eyes at the supermarket now that he has *Sinatra's Sugo da Tavola* pasta sauce on grocers' shelves. Varieties include Marinara with Mushrooms, Milano Style and Tomato Basil with Parmesan. Celebrities can make lots of money by launching a line of food products—witness the success of Paul Newman's salad dressings, popcorn, lemonade, pasta sauce and who knows what's next. However, Newman donates his profits to charity, something Sinatra scoffed at in a press conference announcing the release of his pasta sauce.

James Darren joined the celebrity food fight with his own line of pasta sauce. And Phyllis George's *Pork by George* was added to the chicken line, *Chicken by George* that debuted in 1987.



Celebrity products are an outgrowth of products pitched by celebrity spokespersons, said Mona Doyle, Consumer Network, Philadelphia. (Companies such as Pepsi and The Gap have announced plans to withdraw their celebrity spokespersons campaigns, she said, since celebrities are equated with higher prices—something to be avoided in a recession.)

However, a celebrity's own product cuts through the clutter, she said, which is the first step in any successful marketing campaign. Doyle believes most celebrity products will weather a recession if they are marketed correctly, since consumers equate better quality with a star's good name.

Jocks are also playing up their celebrity by selling more than *Wheaties*. Bernie Kosar, quarterback for the Cleveland Browns, is the first National Football League player to kick off his own chocolate bar. The 2.25-ounce milk chocolate bar features a three-dimensional figure of the football star and retails for $1.25.

Finally, cartoon and video characters are breaking away from TV-land to pitch kid's favorite foods. Nintendo's Super Mario Brothers are now edible as cookies from Salerno. Ralston-Purina has unveiled *Teenage Mutant Ninja Turtles* (TMNT) and a *Jetson's* cereal. TMNT are also available as cookies distributed by Delicious Cookie Co. ConAgra has dubbed its line of healthy frozen dinners for children *Snoopy's Choice*.

As the sheer number of new products continues to propagate, savvy marketers have found that celebrities—both cartoon and real—are at least one way for a product to stand out from the pack.

pany also introduced *Dining Light* under the *Armour Classics* label as "budget-priced" entrees that are low in calories, cholesterol and fat. But a raft of companies have introduced their own healthy entrees, aiming for Healthy Choice's market share. Among them is Stouffer's (Solon, OH), whose *Right Course* entrees sport newly redesigned packaging to better identify the products as low-fat, low-cholesterol meals. Campbell Soup Co. (Camden, NJ) expanded its frozen meal line by introducing the *Eating Smart* entrees. In late 1990, Kraft launched *Eating Right*, a 12-item line of "special recipes for Healthy Eating™."

Consumer requests prompted reformulation of two previously existing lines. Stouffer's *Lean Cuisine* features reduced sodium contents—860 mg down from 1100 mg. *Weight Watchers*, a division of H.J. Heinz, significantly reduced the amount of fat and sodium in its entrees while promoting its *Personal Choice* program in TV campaigns.

It will be interesting to see how All American Gourmet Company of Orange, CA responds to criticism surrounding the new *Budget Gourmet Light* dinners. The line was blasted in a recent issue of a consumer newslet-

ter for calling its Lasagna with Meat Sauce and Sirloin Salisbury Steak "95 percent fat-free." While the claims are true (they were approved by the USDA), the watchdog organization Nutrition Action noted that they were substantiated on a by-weight basis only, capitalizing on the fact that most of the weight in foods comes from water. Although each dinner may contain only 13g of fat, this actually translates to 40 to 45 percent of its total calories.

Kids' Meals: According to a study by the American Frozen Food Institute, American mothers allow their children to operate microwaves independently—38 percent allow 5 to 8 year-olds and 48 percent allow 9 to 12 year-olds to zap foods on their own. More children are preparing their own dinners and, at the very least, are making more choices about the foods they eat. This phenomenon has led manufacturers to create meals specifically for children. In 1990, cartoon characters were the rage. Tyson Foods (Springdale, AR) launched *Looney Tune Meals*™, a line of eight child-sized frozen meals retailing for $2.49. Wile E. Coyote™ Hamburger Pizza and the other entrees obtain no more than 40 percent of their calories from fat, based on American Academy of Pediatrics recommendations. Later in 1990, ConAgra introduced the counterpart to its adult-market *Healthy Choice* meals: *Snoopy's Choice* for kids. Each entree is low in fat and cholesterol, and is sodium-controlled. Toddlers are targeted for Gerber Foods' *Gerber Graduates*. This is the first use of tub packaging for children in this age group, the one to four year olds.

Refrigerated: This category has potential for growth yet large manufacturers are finding it difficult to succeed in test markets. Kraft General Foods' *Kraft Fresh* is now the only national brand left in this market since Nestlé pulled the *FreshNes* line in January. Distribution is a major problem: it is limited to a small geographic area because of the product's short shelf life and this is reflected in an escalated cost to the consumer. However, Peter Allen of FIND/SVP speculates that once manufacturers conquer cost and distribution problems, this category should shoot past the $150 million mark posted in 1990.

HEALTHY BEVERAGES

Despite some well-publicized contamination crises, the bottled water market grew 11 percent in 1990 to $2.6 billion, according to a study by FIND/SVP. Apparently, the recall of Perrier and others did not affect other bottled water brands. In fact, notes Peter Allen of FIND/SVP, "bottled water is the star of the beverage industry—it has been the fastest growing sector since the mid-1980's."

Imported water continues to be in vogue. Brands introduced now, however, will face Perrier's aggressive marketing campaign aimed at regaining category leadership. The French brand *Evian* is distributing *Ferrarelle Italian Sparkling Mineral Water*. The company markets it as a "table water" to be consumed much as a table wine would. Taking a different angle, Triple L Distributing Co. of Carson, CA promotes the mineral content of its *Voslau Naturally Sparkling Mineral Water* imported from Austria.

Even the new alcoholic beverages can sometimes be touted as "healthy" when compared to traditional spirits. In order to appeal to teetotalling

The fitness boom helped push sport drink sales to $475 million in 1990.

baby-boomers, Seagrams Beverage Co. has developed *Taos*, a premium blend of sparkling spring water and wine. The product contains 5 percent alcohol and "splash" of flavor for a crisper taste than a regular wine cooler. Packaged in clear bottles, Taos also carries a premium price of $5.99 for a six-pack.

Another beverage segment showing tremendous growth is the energy drink market. Isotonic, energy-producing beverages totaled $475 million in retail sales in 1990. Marketing Intelligence Service of Naples, NY expects the energy drink market to grow at an annual rate of 15 percent over the next few years.

The venerable *Gatorade* brand, manufactured by Quaker Oats of Chicago, IL, still holds the number one slot, claiming 90 percent of the category share despite the introduction of many new beverages threatening its leadership. To protect its marketshare, Quaker introduced a flanker brand *Freestyle Sports Beverage* through its Stokely-Van Camp division, but has since pulled the product from test markets. Responding to suggestions that Gatorade and other isotonic sports drinks supplied unnecessary salt and sugar, Quaker also introduced *Gatorade Light*. This reduced calorie version of the original contains no fruit juice or caffeine, and is low in calories and sodium.

Expect heavy advertising from Dr. Pepper/Seven-Up promoting *Dr. Pepper's Nautilus*, a low calorie drink sweetened with 100 percent Nutrasweet and positioned to go head to head with Gatorade Light. Other soft drink giants have jumped into the fray with their sports drinks. With the introduction of Coca-Cola's *Powerade* and Pepsi's *Mountain Dew Sport*, the scramble for market leadership is reminiscent of the "cola wars."

Distribution in health clubs and health food stores has created a niche in the beverage market—the "peak performance" beverage. The Charlotte, NC-based company Proformance markets *Proformance Complex Carbohydrate Energy System Drink* to athletes looking to increase energy levels. The drink provides a source of complex carbohydrates and potassium but contains no sodium or artificial ingredients. Several specialty drink mixes containing unusual ingredients are available to those seeking the competitive edge. Among them: Vitasystem's (Mishawaka, IN) *Yakool Health Drink Mix* fortified with yogurt cultures; and *Energy Drink Mix* from Nutritional Specialties, Inc., made with bee pollen in a legume complex carbohydrate base.

RICE & PASTA

Explosive is a word that characterizes the growth of the dry rice and pasta dinner market, with category sales of $1.8 billion expected to jump to $2.4 billion by the end of 1994. While there are several factors accounting for the astounding growth of rice and pasta products, most significant is the relationship between prevailing economic conditions and sales

The widening gap between the rich and poor will drive the growth of rice dishes and pasta meal-extenders.

of these products. Consumers affected by economic downswings often turn to rice and pasta dishes for inexpensive yet nutritious meals. 1990 was no exception—prepared rice and pasta dinners reached sales of $430 million and $650 million respectively, according to a report prepared by FIND/SVP.

Economy and convenience are the hallmarks of the dry dinner market, originating with the Helper mixes introduced by General Mills (Minneapolis, MN) in 1973. Sales for meal-extenders reached $350 million in 1990, and are expected to grow to $500 million by the end of 1994, FIND/SVP's report stated. In 1990, General Mills introduced *Cheddar 'n Bacon Hamburger Helper* as an extension to the popular *Betty Crocker Hamburger Helper* line. The pasta-based mix boasts real bacon pieces and, like its previously-introduced counterparts, needs only the addition of hamburger to make a complete meal.

Another new *Betty Crocker* entry, *Space Adventure Hamburger Helper*, is a response to an increase in the under-15 population. Marketed specially for kids, this dinner features "space-shaped" macaroni in five varieties—pizza, macaroni, spaghetti sauce, beef and cheese. Another children's specialty product is riding the wave of current mania: Primera Foods (Denver, CO) is distributing *Teenage Mutant Ninja Turtles and Cheese Pasta Dinner*. The pasta is made from 100

It's 'fat city' for diet aid marketers

Weight-loss in America is more than a fad, obviously; but the method of choice has been subject to public whimsy. Today, trendy approaches to weight-loss focus on appetite suppressants, high-fiber food supplements and meal replacements. According to a study published by Business Communications Co. (Norwalk, CT), over-the-counter meal replacement products are one of the fastest growing segments (214 percent in 1990) of the $500 million diet aids market.

Thompson Medical's *Slim-Fast* and *Ultra Slim-Fast*, are the current market leaders. In 1990, the company introduced a water-mixable version and a ready-to-drink shake in a can to help retain its market share. Furthermore, Slim-Fast's ad budget swelled to

The makers of Dynatrim hope to snare a large portion of Ultra Slim-Fast's market.

$50 million in order to signal the company's expansion into frozen foods and snacks, manufactured in partnership with ConAgra and Borden. But *Dynatrim*, by Lederle Laboratories of Pearl River, NY, is mounting a $35 million marketing campaign to push Slim-Fast out of the number one slot.

Other manufacturers are relying on their sucrose-free formulations to chip away at Slim-Fast (which contains table sugar) and its hold on the market. *California Slim*, manufactured by California Slim Foods, can be mixed with either milk or fruit juice. *Kal Slim & Firm*, from the Makers of Kal, at 20 calories contains a full day's supply of most essential nutrients. One product combines a sucrose-free meal replacement with an appetite suppressant: *Bikini Beverage*, manufactured by Country Life of Hauppauge, NY, contains Dahlulin, a complex carbohydrate said to prolong a feeling of satiety

percent enriched durum semolina in the shape of each turtle hero.

Dry pasta dinners are not the only products to which marketers have lent support. The healthy, versatile image of rice is the reason for the plethora of new rice side-dishes. In fact, according to Marketing Intelligence (Naples, NY), rice introductions are now seven times greater than in 1980. *Uncle Ben's Rice* is the market leader in this category, with nearly three times the number (38 in the last ten years) of new entries over closest competitors Riviana Foods and General Foods' *Minute Rice*.

Heinz USA's (Pittsburgh, PA) new *Near East* rice mixes combine health benefits with an exotic appeal. An Oriental flavor is captured in *Soft Jasmine* rice, marketed under the *A Taste of Thai* label and distributed by Andre Proust (Old Saybrook, CT).

Continuing interest in ethnic and regional cuisine provides an opportunity for smaller manufacturers like Whisperwood Farms of Roswell, GA, who offers a *Jambalaya Rice Mix*. Peebles Duryee (Kingston, NJ) manufactures *Southern Creole* and *Provincial Herb Rice Blends*, as well as the unusual combination of *Blueberry Almond Wild Rice Blend*.

"Green" packaging has not posed much of a problem to rice and pasta manufacturers. Historically, these products have been packaged in paperboard cartons. But, as more dinners include microwaveable trays, this issue will need attention.

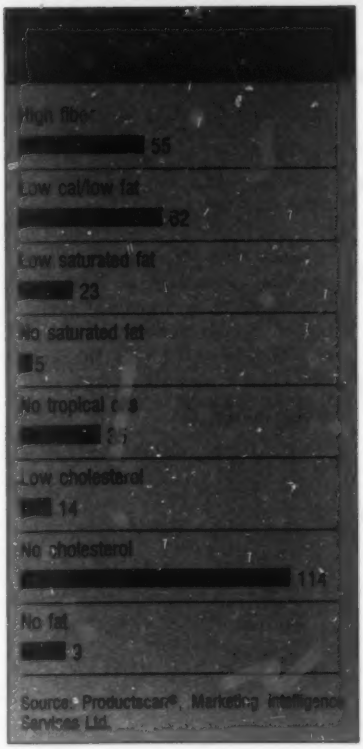
LIGHT BAKERY

Of the 577 new bakery products launched in 1990, 279 (48.4 percent) in 671 varieties (SKUs) were positioned as "healthy," up from the 202 "healthy" bakery products introduced in '89. Breakdown: bread and bread products, 99; pastries, 53; cookies, 83; crackers, 42; specialty baked snack and diet foods, 2. Only half as many new "high fiber" bakery products appeared in 1990 (55) as in '89 (113), but most combined fiber with fat reduction to proclaim several perceived health benefits, and many moved beyond oat bran and wheat bran into new fiber sources. Examples:

- Rice-bran breads from *Roman Meal*, *Country Hearth* and *Orowheat*, plus *Fiberlife* rice-bran bread from DCB.
- Corn-bran breads: *Sunlite*, from J. R. Short Milling Co.; *Northridge*, from Orowheat.
- Breads containing synergistic blends of brans, such as *Hollywood Fitness Blend* (soy, corn, rice and wheat brans), licensed by National Bakers Services; *5 Bran Bread* (rice, oat, corn, wheat and barley brans), from Continental Baking Co.; *Brownberry Country Bran Light Bread* with five brans and only 40 calories per slice, from Arnold Foods; *Smart Slice Fitness Recipe Bread*, low in sodium and 96-percent fat-free with four brans, no cholesterol and 50 calories per slice, from Continental.

The "lite bread" trend launched with white bread in '89 continued last year with line extensions by bakers such as Freihofer, Continental, Interstate and Arnold into variety breads such as rye, oat bran, and wheat containing only 40 calories per slice. Several were positioned as high in fiber, low in fat and cholesterol-free. Rainbo and Colonial (both divisions of Anheuser-Busch) aimed at both children's tastes and mother's nutritional concerns with *Ironkids Bread*, wholewheat bread with the taste and texture of white bread yet high in vitamins and fiber and cholesterol-free.

Sara Lee introduced two low-calorie frozen dessert lines: single-serving *Sara Lee Lights* in eight varieties, low in cholesterol and with no tropical oils; and *Sara Lee Free & Light*, a seven-item line of pies, cakes, muffins and Danish plus a yogurt dessert, positioned as 98-percent fat-free, cholesterol-free, low in sodium and with one-third fewer calories than their conventional counterparts. Drake



NEW PRODUCT ANALYSIS

Bakeries unveiled three varieties of *Light & Fruity* coffee cakes, 97-percent fat-free with one-third fewer calories and no cholesterol or tropical oils. Continental introduced *Hostess Breakfast Lights* cinnamon-crumb cakes, cholesterol-free and 97-percent fat-free. Entenmann's, however, won the fat-reduction race by introducing a line of *fat-free* cakes and cookies with 100 calories per serving.

Of the 83 "healthy" cookie items introduced last year, 33 were tagged "no cholesterol," 14 "no tropical oils." *Sprinkled Chips Ahoy* from Nabisco are tagged with both. Keebler's *Mini-Middles* are low in saturated fat with no cholesterol. Most unique cookie of 1990: Health Valley *Fat-Free Jumbo Fruit Cookies*, sweetened with fruit and juices with soluble and insoluble fibers from 15 different sources.

LIGHT DAIRY

Sixty-four "light/lite" cheese products were introduced in 1990, up from 24 in '89. A representative sampling is shown above. (Source: Wisconsin Milk Marketing Board.)

Of the 445 new dairy products (914 SKUs) launched in 1990, 303 (68 percent) were positioned as "light" or "healthy," more than twice the 130 "light" dairy products unveiled in 1989. Breakdown: milk, 31; cheese, 80; ice cream/frozen desserts, 131; butter, margarine and blends, 20; yogurt, 19; dairy substitutes, 10; sour cream/dips, 12.

According to *U.S. Industrial Outlook 1991* (Dept. of Commerce), ice cream and frozen-dessert shipments rose 7.5 percent in 1990 but per-capita consumption of ice cream dipped 0.6 percent as more consumers shifted to low-fat alternatives. Kraft General Foods (KGF) late in '89 launched *Sealtest Free*, the pioneer "nonfat ice cream," and competitors waited to see if KGF could get away with it. But as soon as KGF repositioned the product as a "nonfat frozen dairy dessert" to comply with FDA standards of identity (which define ice cream as 10 percent milkfat), competitors followed with similar products. NutraSweet introduced *Simple Pleasures*, based on its *Simplesse* fat substitute; Eskimo Pie unveiled *Fat Freedom*, the first frozen novelty to incorporate Simplesse; Borden, Dean, H.P Hood, Superior Dairy and Safeway (*Lucerne*) quickly introduced nonfat frozen dairy desserts; KGF followed-up its initial success with *Sealtest Free* nonfat frozen-dessert bars. Gold Bond (Unilever) introduced *Fudgsicle Fat-Free* bars.

Per-capita consumption of frozen yogurt (in most cases a semantic evasion of FDA standards because few brands contain active yogurt cultures) soared 45.4 percent, according to *Industrial Outlook*. Fifty-one new lowfat frozen-yogurt products appeared in 1990. Most unique were the *nonfat* varieties. Examples: Elgin Honey-Hill's *Bee-Lite*; KGF's *Sealtest Free* nonfat frozen yogurt; *White Clover Dairy* fat-free frozen yogurt *with* active cultures.

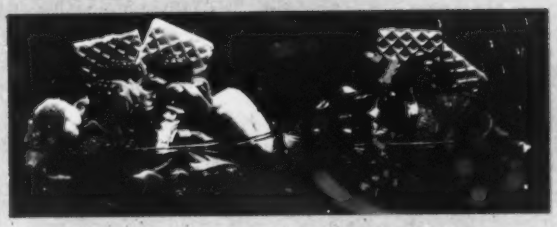
Lowfat/nonfat cup yogurt introductions declined from 27 in '89 to 18 last year. Yoplait USA (General Mills), Kemp's (Wessanen USA), Bison Foods (Upstate Milk Cooperatives), Kraft (*Light n' Lively Free*), Penn Maid and Dannon all unveiled nonfat yogurts in a wide range of flavors. Three others were actually yogurt substitutes. Example: *SoyaLatte* "non-dairy yogurt" (no cholesterol or

Sweet Treats—Even Pasta

Gourmet indulgences offer consumers a sweet and inexpensive break from the pressures of economic rough times. Although there is no official tally of gourmet indulgence consumption, shipment of candy products according to the U.S. Industrial Outlook rose 6.7 percent to $9.1 billion—much of which is being bought by adults.

Consumers often retreat from the battle of the bulge to indulge in a gourmet adventure. Perhaps one of the most unusual gourmet indulgences are made by a Richland, WA-company that is turning heads by offering pasta for dessert. Pasta Mama's offers over 30 varieties of freshly-dried pastas in varieties such as jalapeño, chocolate, Cafe Irish Creme, blueberry, raspberry, walnut, cinnamon-nutmeg and cranberry.

"Dessert pastas are treated like a crepe," said Paul Santillie, who co-owns Pasta Mama's with his wife, Diane. The dessert pasta can either be topped with fruit and cream or sweet sauce mixes that are sold separately. The Santillies started their business from a weekend hobby which went full time in 1986. Sales totaled $2 million in 1990 and the pastas are distributed nationally.



Pasta takes on a new twist as a crêpe-like dessert created by a Richland, WA company.

Another gourmet indulgence is the perennial favorite—chocolate. Come hell, high water or even the rumor of recession—shipments of chocolate remain bouyant as consumers in 1990 continued to take solace in a relatively inexpensive treat. Chocolate candies comprise a little more than two-thirds of confection sales and consumption of chocolate candies increased 3.2 percent to 2.8 billion pounds in 1990.

Chocolate and consumers' other great passion, champagne, uncorked *Peel & Pour Chocolate Covered Champagne* by Tomfoolery Serious Chocolate Co. Varieties include milk, dark or white chocolate.

Hershey Foods has positioned a new chocolate candy to compete with Godiva at the price of a Hershey bar. *RSVP* is filled with caramel and chocolate cream and is packaged in a 1.2 ounce gold-edged box.

Chocolate showed up in more than half of Kraft General Foods' (KGF) *Fresh Creations Refrigerated Desserts*, a line that replaced the former *Chillery* line in test markets. Varieties include: White Chocolate Swirl Cheesecake, Pecan Torte, Chocolate Chocolate Chip Cheesecake, Dutch Apple Pie, Caramel Crunch Brownie, Fudge Brownie and Carrot Cake.

While it is true that consumers continue to shop for light products, it is also true that they often reward themselves with indulgent treats like chocolate and cake. Many in the food industry recognize this and are going to great efforts, as the preceding examples show, to make the occasional indulgence well-worth the expended calories.

lactose) from Soyeh Natural.

Lowfat/low cholesterol cheese introductions grew from 24 in '89 to 64 in 1990. (Another 16 new cheese products were positioned as low in sodium or with "no preservatives.") Cheesemakers gained confidence in marketing lowfat Cheddars: 20 were launched last year (not including spreads or imitations), up from only four in '89. Schreiber Foods launched *Lifecare* in five varieties including Cheddar, all with one-third less fat and half the cholesterol of full-fat cheeses. Weight Watchers (Heinz) unveiled part-skim Sharp Cheddar, Jack and Colby with 40 percent less fat, and Swiss with 35 percent less fat. *Holland Farm* reduced-fat Farmer cheese from White Clover Dairy has 44 percent less fat than most Cheddars. Most innovative process cheese of 1990: *Kraft Free Singles*, a *no fat* low-cholesterol version of *Kraft Singles* with only half the calories. French cheesemakers introduced lowfat Chevre, Emmenthal, Brie and Boujolais to the U.S.

"Extra light" milk with 1 percent milkfat, positioned between 2% and skim, was introduced by most California dairies and elsewhere by processors such as H.P. Hood, Superior Dairy and Dean's. ▲

EQUIPMENT BUYERS SURVEY

1991 EQUIPMENT BUYERS SURVEY

Process control and sanitation continue to top the list of equipment purchasing priorities. Needed: better sensors and on-line analysis.

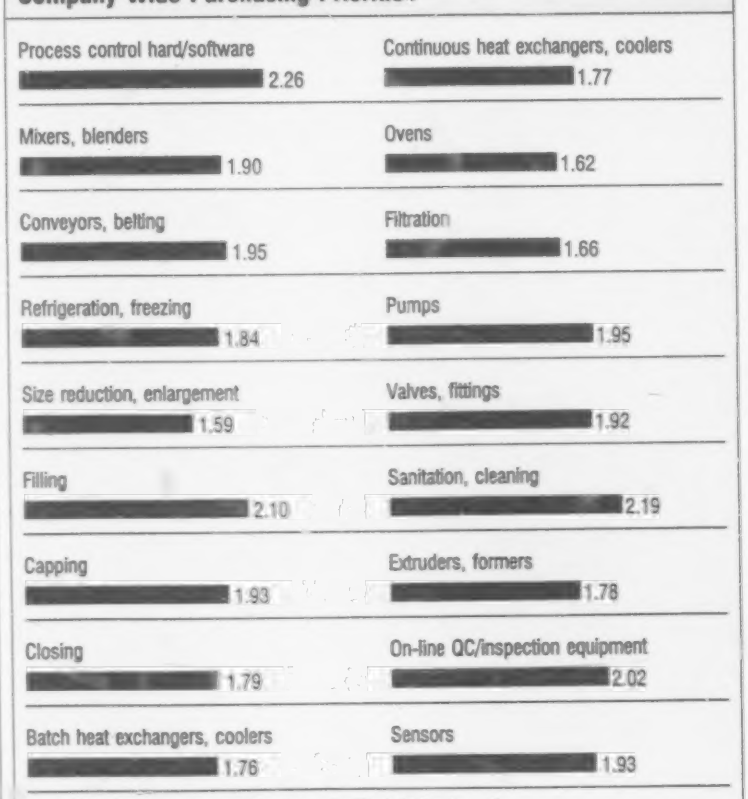
CHARLES E. MORRIS
MIDWEST EDITOR

Most economic gurus predicted recession in 1991, but they didn't talk to *Food Engineering's* Executive Advisory Panel.

Fully 80 percent of the respondents to *FE's* 1991 Process Equipment Buyers Survey forecast increased production for their companies in 1991, and 11 percent more envision at least the same production level as 1990. Production increases don't necessarily translate into sales and profit increases, of course, but they certainly stimulate purchasing activity.

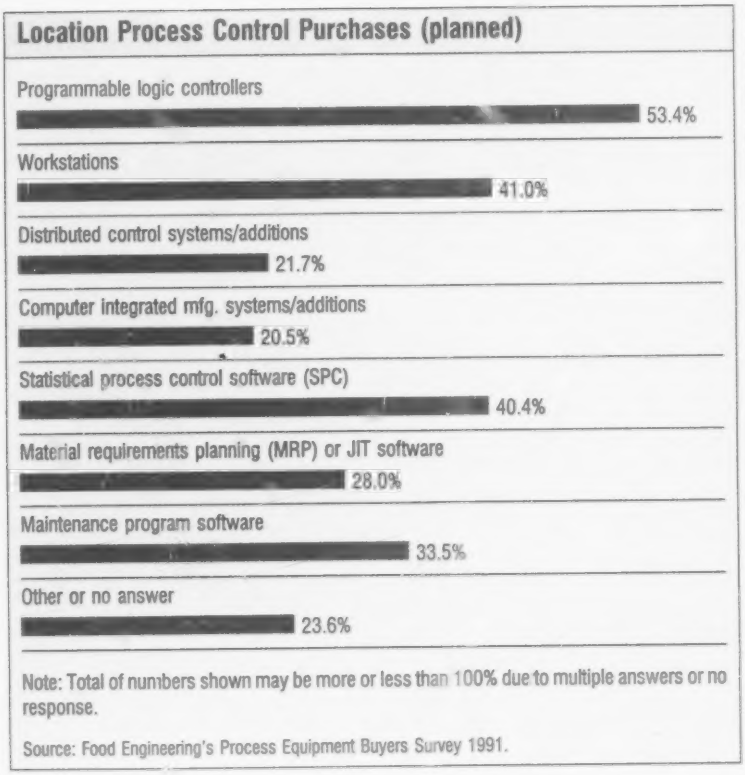
The panel reflects a cross-section of food-industry executives in top management, R&D, production, purchasing, engineering, quality control, packaging and marketing. Of 234 respondents to the survey, 29.1 percent said their firm's production would soar by more than 10 percent in '91; 32.1 percent forecast increases of 6 to 10 percent; 18.8 percent see produc-

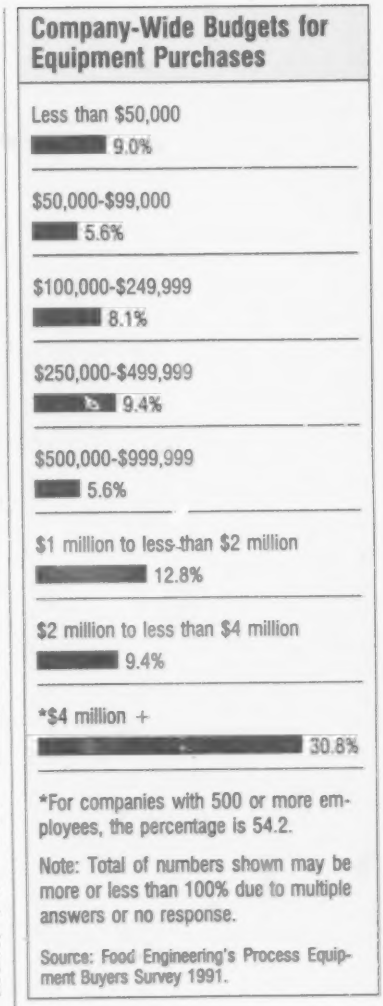
Company-Wide Purchasing Priorities



Low Priority = 1; Some Priority = 2; High Priority = 3

Source: Food Engineering's Process Equipment Buyers Survey 1991.





tion up but less than 6 percent; and 10.7 percent expect production levels to be about the same as last year.

Only 9 percent predicted declines: 4.3 percent see production down by less than 6 percent, 1.7 percent project slumps of 6 to 10 percent, and one real pessimist forecasts a free-fall of more than 10 percent. Seven respondents (3 percent) said their plants will shut down this year, reflecting some continuing consolidation of the industry. The survey was taken, however, before the outbreak of The Gulf War, which initially sent stock-market and oil prices following the trajectory of every Scud. At this writing the impact of the war was uncertain—and business does not thrive on uncertainty—but the overall trend of oil prices and interest rates was down and that of the Dow Jones up, perhaps restraining real recession until the bills for Saddam and the S&Ls come due.

Bigger budgets forecast

Companies seem to be backing up their optimism with bigger equipment budgets. Last year, 24.8 percent of respondents said their companies were budgeting more than $4 million to purchase production, packaging and process control equipment. This year, 30.8 percent projected company equipment budgets of more than $4 million. Over half of these are firms with more than 500 employees, but nearly 40 percent of them are mid-size companies with 100-500 employees.

Process control top priority

Purchasing priorities closely parallel those of last year's survey, with process-control hardware/software taking top priority. As part of the survey, *FE* asked the panel: "Where is it most important for your company to invest in future automation/process control?" Answers ranged across the entire spectrum of operations—batching, blending, conveying, weighing, filling, packaging, CIP and energy control were most often cited—but included some thoughtful and provocative responses:

- "In our people—this is the limiting factor in our ability to grow and meet new and existing challenges," said the corporate engineer at a breakfast-cereal company.
- "To supply as much process information as possible to operators so they can take full advantage of SPC [statistical process control]," said the process-engineering manager at a potato-products manufacturer.
- " 'Automation' is not always good, especially if overdone," observed a researcher at a major dairy-products company. "We find that employees become 'robotized' and lose touch with the actual process. We might de-automate slightly to re-involve the operators."
- "Forecasting, scheduling and preventive maintenance," said the industrial-engineering manager at a major meat-processor, zeroing in on three key software applications.

Others interpreted the question in terms of benefits expected. Quality assurance, product consistency (standardization), increased capacity, improved efficiency and cost reduction were most often cited.

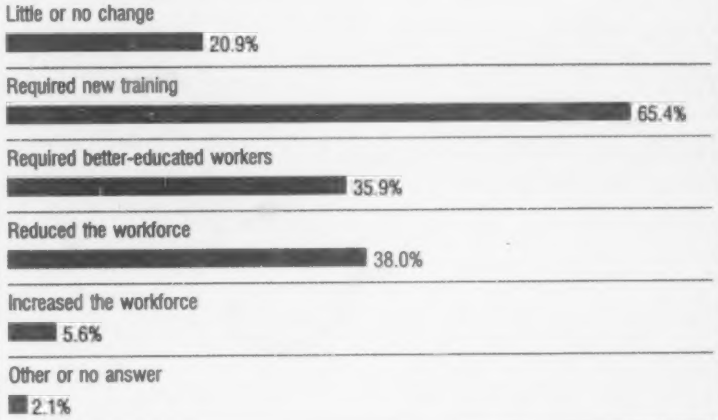
Some respondents from large, multi-plant companies answered the question in terms of integration and communications. "Expanding existing technology to all company locations," responded the packaging-engineering manager of a vegetable-oil products company. "Networking PLCs," said a project manager for a cookie/cracker baker. The technical-services director of a company producing both ingredients and finished foods observed that "we need better control/uniformity from our sister divisions which supply us with ingredients and packaging materials, [so] we need to do a better job of communicating our needs to them."

The project-engineering manager at a diversified foods manufacturer summed it up: "Integrated control systems covering the business."

Sanitation critical

Sanitation/cleaning equipment ranks second in corporate purchasing priorities. Slightly more than half (51.7 percent) of respondents rate their plant-sanitation levels as "excellent," while 44.9 percent concede that plant sanitation is "adequate, but needs improving." To improve sanitation, 61.1 percent believe that plant design must be modernized, 41.9 percent cite "more CIP" and 26.1 percent named "new equipment." Nearly 55 percent of respondents report that their companies have HACCP programs in place; 8 percent plan to initiate HACCP this year. HACCP isn't limited to the larger companies: 57

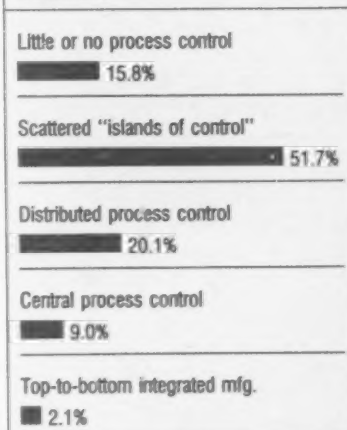
Impact of Automation on Workforce



Note: Total of numbers shown may be more or less than 100% due to multiple answers or no response.

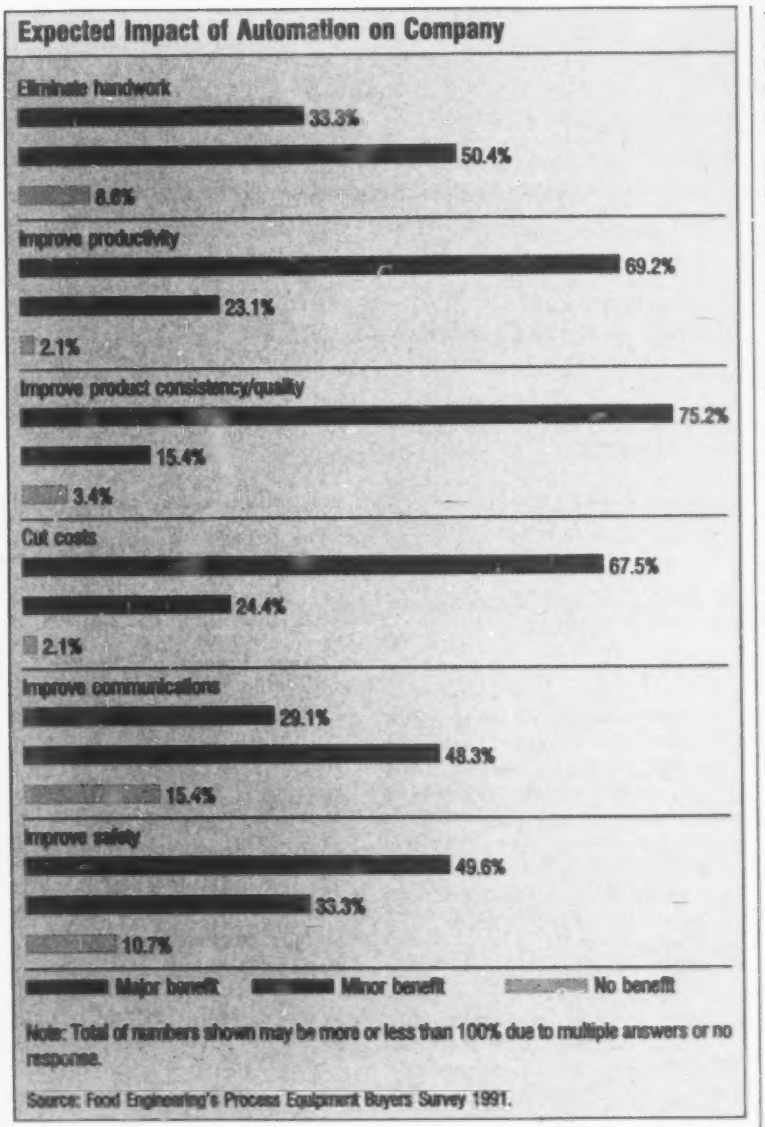
Source: Food Engineering's Process Equipment Buyers Survey 1991.

Company-Wide Automation Estimate



Note: Total of numbers shown may be more or less than 100% due to multiple answers or no response.

Source: Food Engineering's Process Equipment Buyers Survey 1991.



percent of respondents from firms with 500-plus employees have HACCP, as do 50 percent of respondents from firms with fewer than 100 people.

Sensors & on-line analysis

Several respondents cited sensors and sensor development as the most important area for investment in future automation, and this perception was confirmed in several answers to *FE's* second question: "What production equipment would you like to see that is not now available from any supplier?"

- "On-line sensors for...viscosity, particle size, physical/chemical attributes."
- "On-line density measurement of ice cream."
- "A low-cost, high-accuracy mass flow-control system."
- "A reliable and accurate on-line moisture analyzer for dry solids."
- "Wear-resistant temperature, pressure and moisture sensors."
- "Real-time sensors to critically adjust ingredient additions on continuous-process equipment."

As shown on the adjoining graph, sensors and on-line quality-inspection equipment rank high among corporate purchasing priorities.

Flexibility & high tech

Several respondents to *FE's* second question stressed the need for flexible equipment. Examples:

- "Equipment that can handle a wide spectrum of textures, densities and particle sizes with excellent accuracy and gentle action."
- "High-speed, versatile and quickly changed-over packaging equipment."
- "Equipment that allows fast changeover between products and package sizes."

Others cited needs for high-speed robots on multi-product lines, automatic case-packers for flexible packages, and improved cross-flow membrane-filtration systems offering more throughput with less cleaning and maintenance.

Two respondents put continuous microwave-sterilization systems on the "wish list" (see "Processing & Control section," this issue). But the greatest technological challenge was posed by the new-product development manager at a seafood packer: "A continuous dielectric system for processing canned food in the can, providing superior taste due to HT/ST heat treatment." ▲